

# KADI SARVA VISHWAVIDYALAYA - GANDHINAGAR

Teaching & Examination scheme  
Effective from Academic Year June 2010 onwards

## BACHELOR OF COMPUTER APPLICATIONS B C A SEMESTER-III

Sr. No./ Subject Code	Subject Title	Credit	Teaching Scheme		Exam Scheme					
			Theory/ Practical	Tut	Theory		Practical		T.W +Sessional Marks	Total Marks
					Hrs.	Max Marks	Hrs	Max Marks		
BCA301	OS & Data structure (Windows and Linux utility point of view, DS unto trees )	4	3	1	3	60	-	-	40	100
BCA302	DBMS –II (40% theory 60 % ORACLE)	4	3	1	3	60	-	-	40	100
BCA303	GUI Programmin g Using .NET platform	4	3	1	3	60	-	-	40	100
BCA304	Processor Architecture & Utility	4	3	1	3	60	-	-	40	100
BCA305	Software Project Managemen t	4	3	1	3	60	3	-	40	100
BCA306	Practical ( 301)	2	2	-	-	-	3	30	20	50
BCA307	Practical (302)	2	2	-	-	-	3	30	20	50
BCA308	Practical (303)	4	4	-	-	-	3	30	20	50
BCA309	Project Work (304 &305)	2	2	-	-	-	-	50	50	100
<b>Total</b>			<b>27</b>	<b>3</b>						<b>750</b>
<b>Total Hours</b>			<b>30</b>							
<b>Total Credits of semester</b>			<b>30</b>							

**KADI SARVA VISHWAVIDYALAYA**  
**BCA- SEMESTER - III**  
**BCA-301 Data Structure and Linux Utilities**

**Rationale:** To understand the concepts of Linked List, Stack Queue, Sorting-Searching using C and applications of Data Structure in Operating System. To understand the environment of Linux Operating System.

**Learning Outcomes:**

Student will be able to understand

- The concepts of Data Structure
- Use of various concepts of DS to develop efficient programs and managing different types of real and abstracts data types.
- Use of Data Structure in Operating systems as well as other relevant application area.
- Understand the usage of environment and tools of Linux Operating System

**Teaching and Evaluation Scheme:** The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of internal examinations which consist of Term Work such as class test, quizzes, class participation, home assignments, presentation, Regular Attendance (i.e. Minimum 85% ), Internal marks which consist of 40 (20 Term Work + 20 Sessional Exams) marks and External marks which consist of 60 for University examination.

Sr. No./ Subject Code	Subject Title	Teaching Scheme			Exam Scheme					
		Cr.	Th. /Pr	Tut	Theory		Practical		T.W +Sessional Marks (40)	Total Marks
					Hrs	Max Marks	Hrs	Max Marks		
BCA301	Data Structure and Linux Utilities	4	3	1	3	60	-	-	40	100
BCA306	Practical (301)	2	2	-	-	-	3	30	20	50

**Course content:**

**Unit 1:**

**Introduction of data structure and Array overview:** [10%]

The concept of data structure, Primitive data structure, Non Primitive data structure, Operation on data structure, Abstract data type, Overview of Array.

**No of Lectures:03**

**Unit 2:**

**Stack & Queue:** [20%]

Introduction to stack, Stack as an ADT, Operation on Stack, Infix, Prefix, Postfix. Introduction to Queue, Queue as an ADT, Operation on Queue, Types of Queue (Simple, Circular, Double Ended Queue, Priority Queue),

**No of Lectures:08**

**No of Practical:12**

**Unit 3:**

**Linked List:** [20%]

Introduction of Linked list, Single Linked list, Single Circular Linked List, Double Linked List, Double Circular Linked List.

**No of Lectures:04**

**No of Practical:16**

**Unit 4:**  
**Conceptual View of Tree:** [10%]  
Tree terminologies, Binary Tree, Binary Search Tree, AVL Tree, Tree Traversal.

**No of Lectures:04**

**Unit 5:**  
**Sorting & Searching:** [15%]  
Linear Search, Binary Search.  
Insertion Sort, Selection Sort, Bubble Sort, Quick Sort.

**No of Lectures:05**  
**No of Practical:08**

**Unit 6:Graph:** [10%]  
Introduction to Graphs, Types of Graph, Representation of Graphs, Graph Traversals: DFS and BFS, Template of Graph using one Application, Applications of Graph.

**No of Lectures:04**

**Unit 7:Application of DS in OS:** [05%]

Application of Stack and Queue: CPU scheduling in multiprogramming environment, round-robin algorithm. Applications of Linked List: File Allocation Table (FAT), Process Control Block (PCB), Interrupt Request Assignment (IRA). Application of Tree: Directory Structure.

**No of Lectures:03**

**Unit 8 :Introduction to Linux Operating System** [10%]  
Introduction, components of Linux Desktop, Linux Menu, Nautilus file manager, nautilus ( list and tree view), copying, pasting, renaming, deleting files with nautilus, file properties, command line interface, window components, locking the screen, system preferences menu, accessibility, background, keyboard shortcuts, menus and toolbars, mouse, password, remote desktop, screen saver, themes, panel, panel preferences.

**No of Lectures:04**

**Total No of Theory Lectures: - 35 Hrs.**  
**Total No of Practical Lab.: - 36 Hrs.**

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**Text Book:**

Classical Data Structure – D. Samanta – PHI Publication  
Data Structures: Theory and Problems – K.K.Patel and Kaushar Ghanchi  
Linux as easy as A B C - By RedHat

**Reference**

Data Structure - Tanenbaum  
Data Structures through C – Yashavant Kanetkar  
An Introduction to Data Structures with Applications – Jean Paul Tremblay and Paul G. Sorenson  
Linux Complete Reference by Vijay Shekhar.

### Instructional Strategies:

1. Building Background
2. Direct Instruction
3. Review and check of Prior knowledge
4. Integrate topics and concepts
5. Guided Practice
6. Independent Practice
7. Demonstration using technology tools
8. Provide examples to transfer learning
9. Problem Solving.

### Teaching and Examination Scheme

UNIT	Examination Scheme % weightage	Teaching Scheme No of Lectures	
		Th	Pr
1	10	3	0
2	20	8	12
3	20	4	16
4	10	4	0
5	15	5	8
6	10	4	0
7	05	3	0
8	10	4	0
<b>Total</b>	<b>100</b>	<b>35</b>	<b>36</b>

### Sample questions

1. Explain classic data structure
2. Explain Abstract Data Type
3. Explain stack as an ADT
4. Write the algorithm for stack
5. Write the algorithm of Queue
6. Explain application of stack
7. Explain application of queue.
8. Explain types of linked list
9. Write the algorithm of linked list
10. Write short note on priority queue
11. Explain types of queue.
12. Create binary tree and traverse it
13. Create BST and perform insertion and deletion
14. Create AVL Tree as per given data.
15. Differentiate linear search and binary search.
16. Explain different types of graph.
17. Different representation of Graph
18. Explain BFS and DFS
19. Explain different application of graph

**Sample Practical Exercise:**

1. Implement Stack
2. Program to convert an expression from infix to postfix
3. Program to implement Simple Queue
4. Program to implement Circular Queue
5. Program to implement Double Ended Queue
6. Single linked list
7. Single circular linked list
8. Double linked list
9. Double Circular linked list
10. Write a Program for bubble sort and selection sort
11. Insertion sort and Quick Sort
12. Binary Search and linear search

**KADI SARVA VISHWAVIDYALAYA**  
**BCA- SEMESTER - III**  
**BCA-302 Database Management System - II**

**Rationale:** Database Management System-II enables students to develop understanding of the basic concepts of data in general and Relational Database System in particular. The students will learn Database concept, normalization, advanced database concepts such as transaction control, management and distributed database.

**Learning Outcomes:** The students will be able to understand:

- Basic concepts of database designing through normalization.
- Creation of database, tables, queries, advanced queries in oracle.
- Various methods available to control concurrency in transaction management.
- Components of DDBMS and its structure.
- Various aspects of Database Administrations

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Subject Code	Subject Title	Teaching Scheme				Exam Scheme					
		Cr.	Th.	Pr.	Tut	Theory		Practical #		T.W +Sessional Marks	Total Marks
						Hrs.	Max Marks	Hrs	Max Marks		
BCA302	Database Management System II	4	3	-	1	3	60	3	-	40	100
BCA307	Practical (302)	2	-	2	-	3	-	-	30	20	50

**Course Content:**

**UNIT 1: Normalization of Database Tables**

**[15%]**

Database tables and normalization, functional dependencies, normalization and database design [with example], higher level of normal forms, de-normalization.

**No of Lectures: 6**

**UNIT 2: Implementing the database design through ORALCE**

**[45%]**

Introduction to SQL, Data Definition commands, data manipulation commands, queries, advanced data management commands, complex queries, updatable views, converting E-R model into a Database structure[with example], rules governing relationship among tables.

**No of Lectures: 10**

**No of Practical: 15**

**UNIT 3: Transaction Management and Concurrency Control** [15%]

What is a Transaction? - Transaction Properties- The Transaction Log - Concurrency Control with locking methods,-Concurrency Control with Time Stamping Methods, - Concurrency Control with Optimistic methods, - Database Recovery.

**No of Lectures: 6**

**UNIT 4: Distributed Database Management System** [10%]

Advantages, disadvantages, distributed database and distributed processing, DDBMS components.

**No of Lectures: 2**

**UNIT 5: Database Administration** [15%]

Database administration functions, The DBA as a managerial Role , The DBA as a Technical Role, database administration tools, managing database objects, managing users and establishing security

**No of Lectures: 6**  
**No of Practical: 05**

**Total No of Lectures: 30 Hrs.**

**Total No of Practical: 20 Hrs.**

**TEXT BOOK:**

1. Database Concepts, Books India Publication, Dr. N. N. Jani, Shivani Trivedi, Nidhi Divecha, Rebekah Jobdas
2. Database Systems Forth Edition, by Peter Rob and Corlos Coronal
3. SQL and PL/SQL Programming by Irwan Byras

**References:**

1. An Introduction to Database Management Systems, C. J. DATA,
2. NAROSA PUBLISHING HOUSE.
3. Computer Database Organization, James Martin, PHI.
4. Database System Concepts, KORTH.
5. Database Management and Design. Garry W Hanson & James V Hanson, PHI [1999]
6. Fundamentals of Database Management Systems, Second Edition, ELMASRI & NAVATE. BENJAMIN, CUMMINGS [1944].
7. Database Design Using Entity-Relationship Diagrams  
by Sikha Bagui and Richard Earp ISBN:0849315484, Auerbach Publications © 2003 [242 pages]

**Instructional Strategies:**

1. Building Background
2. Direct Instruction
3. Review and check of Prior knowledge
4. Integrate topics and concepts
5. Guided Practice
6. Independent Practice
7. Demonstration using technology tools
8. Provide examples to transfer learning
9. Problem Solving for ER-Modeling and Normalization
10. Case Studies

## Teaching and Examination Scheme

UNIT	Examination Scheme % weightage	Teaching Scheme No of Lecture	
		Th.	Pr.
1	15	6	0
2	45	10	15
3	15	6	0
4	10	2	0
5	15	6	5
<b>Total</b>	<b>100</b>	<b>30</b>	<b>20</b>

### Sample Questions:

1. What is normalization?
2. Explain all normal forms of normalization.
3. Is it right that the highest level of normal form is always desirable?
4. What is a partial dependency? With which normal form is it associated?
5. Discuss transitive dependency.
6. Describe Data Definition Commands with examples.
7. Describe Data Manipulation Commands with example.
8. Explain different operators used in Oracle.
9. Explain Data types.
10. What is constraint?
11. What are table level and column level constraints?
12. Explain not null, unique, and default constraint.
13. How to insert data in the table, discuss all different methods.
14. Discuss Aggregate functions.
15. What is E-R Diagram? What is the use of that?
16. What is transaction? Explain with example.
17. What is concurrency control?
18. Explain three main problems of concurrency.
19. Explain Transaction log?
20. Explain Time stamping method.
21. Explain locking levels and locking methods.
22. What is database backup and recovery?
23. Explain DDBMS with its components.
24. Discuss advantages and disadvantages of DDBMS.
25. Explain Database Administration tools.

### List of Practical:

1. Implementation of normalized database
2. Implementation of data definition language; create; alter etc.
3. implementation of data manipulation language; select;update;insert;delete etc
4. Advanced query concepts
5. use of grant and revoke commands



### Sample Practical Exercise:

**Ques. Create following tables. Apply all the possible CONSTRAINTS. Insert FOUR records in each table.**

**Client\_Master** (Client\_no, Name, Address, City, Pincode, State, Balance\_due)

**Product\_Master** (Product\_No, Description, Profit\_Percent, Unit\_Measure, Qty\_On\_Hand, Reorder\_Level, Sell\_Price, Cost\_Price)

**Salesman\_Master** (Salesman\_No, Salesman\_Name, Address, City, Pincode, State, Sales\_Amount, Target\_To\_Get, Yearly\_targeted\_Sales, Remarks)

**Sales\_Order** (Order\_No, Order\_Date, Client\_No, Delivery\_Address, Salesman\_No, Delivery\_type, Billed\_Yes\_Or\_No, Delivery\_Date, Order\_Status)

**Sales\_Order\_Details** (Order\_No, Product\_No, Qty\_Ordered, Qty\_Dispatched, Product\_Rate)

### Lab Exercise 1: Solve the following SQL Queries:

1. Find the names of all clients having 'a' as the second letter in their names.
2. Find out the clients who stay in a city whose third letter is 'a'.
3. Find the list of all clients who stay in 'Bombay' or 'Delhi'.
4. Print the list of clients who's Balance\_Due is greater than value 10000.
5. Print the information from Sales\_Order table for orders placed in the month of January.
6. Display the order information for Client\_No 'C00001' and 'C00002'.
7. Find products whose selling price is greater than 2000 and less than or equal to 5000.
8. Find products whose selling price are more than 1500. Calculate a new selling price as, original selling price \* 0.15. Rename the new column in the above query as new\_price.
9. List the names, city and state of clients who are not in the state of 'Maharashtra'.
10. Count the total number of orders.
11. Calculate the average price of all the products.
12. Determine the maximum and minimum product prices. Rename the output as max\_price and min\_price respectively.
13. Count the number of products having price greater than or equal to 1500.
14. Find all the products that's Qty\_On\_Hand is less than Reorder\_Level.
15. Display first five characters of clients name.

### Lab Exercise 2: Date Manipulations:

1. Display the order number and day on which clients placed their order.
2. Display the month (in alphabets) and date when the order must be delivered.
3. Display the Order\_Date in the format 'DD-Month-YY'. E.g. 18-February-03.
4. Find the date, 15 days after today's date.
5. Find the number of days elapsed between today's date and the delivery date of the order placed by the clients.

### Lab Exercise 3: Having and Group By Clauses:

1. Print the Description and Total Qty sold for each product.
2. Find the value of each product sold.
3. Calculate the average qty sold for each client that has a maximum order value of 15000.00.

4. Find out the sum total of all the billed orders for the month of January.

#### **Lab Exercise 4: Joins and Correlation:**

1. Find out the products, which have been sold to 'Ivan Bayross'.
2. Find out the products and their quantities that will have to be delivered in the current month.
3. Find the Product\_No and Description of constantly sold i.e., rapidly moving products.
4. Find the names of clients who have purchased 'CD Drive'.
5. List the Product\_No and Order\_No of customers having Qty\_Ordered less than 5 from the Sales\_Order\_Details table for the product '1.44 Floppies'.
6. Find the products and their quantities for the orders placed by 'Ivan Bayross' and 'Vandana Saitwal'.
7. Find the products and their quantities for the orders placed by Client\_No 'C00001' and 'C00002'.

#### **Lab Exercise 5: Sub-Queries:**

1. Find the Product\_No and Description of non-moving products i.e., products not being sold.
2. Find the Customer Name, Address, City and Pincode for the client who has placed Order\_No 'O19001'.
3. Find the client names that have placed orders before the month of May'96.
4. Find out if the product '1.44 Drive' has been ordered by any client and print the Client\_No, Name to whom it was sold.
5. Find the Names of Clients who have placed orders worth Rs. 10000 or more.

#### **Lab Exercise 6: View, Index and Sequence.**

1. Create a view of the name Client\_View to display information about the client's information that have placed orders after the month of May'98 and check whether the above created view is updateable or not?
2. Create a view of the name Sales\_Person\_view to display all information about salesperson and Check whether the above created view is updateable or not?
3. Create an index on sales\_order table on **Order\_No**.
4. Create a sequence to generate serial no starting from 1001.

**KADI SARVA VISHWAVIDYALAYA**  
**BCA- SEMESTER - III**  
**BCA-303 GUI Programming Using .NET platform**

**Rationale:** Visual Basic .Net is the front end tool which is used for programming in applications like Microsoft studio. VB.Net is used in creating Applications of types, desktop applications; proper windows based layout and designing. The windows components are used to develop an application.

**Learning Outcomes:** The student will be able to:

- Understand the difference between procedures oriented language and object oriented language along with framework technology
- It revises the concept of events, methods.
- Understand the procedure of working with validation.
- Learn and interact about GUI based tool and other advanced tools
- Know to develop GUI based standard applications, some games and other interesting application

**Teaching and Evaluation Scheme:** The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of internal examinations which consist of Term Work such as class test, quizzes, class participation, home assignments, presentation, Regular Attendance (i.e. Minimum 85% ), Internal marks which consist of 40 (20 Term Work + 20 Sessional Exams) marks and External marks which consist of 60 for University examination.

Sr. No./ Subject Code	Subject Title	Teaching Scheme				Exam Scheme					
		Cr.	Th	Pr.	Tut	Theory		Practical		T.W +Sessional Marks (30)	Total Marks
						Hrs	Max Marks	Hrs	Max Marks		
BCA303	GUI programming using .NET Platform	4	3	-	1	3	60	-	-	40	100
BCA308	Practical (303)	2	-	2	-	-	-	3	30	20	50

**Course Content:**

**Unit 1: Introduction to Framework technology**

**[10%]**

Overview of Frame work & Architecture  
 Versioning and deployment  
 CLR, CTS ,CLS : three base of framework  
 Metadata  
 IDE for windows programming ( toolbox, solution explorer , property window , output window , command window , task list window )

**No of lectures : 04**

**Unit 2: Basics of VB.NET**

**[15%]**

Variable , constants & object declaration in vb.net  
 Operators , flow control statements  
 Modular ( subroutines, functions )  
 Introduction about property , events and methods  
 Your first windows application & some console application with some input box and message box, Multiple Documents Interface

**No of lectures :05**

**No of Practical : 03 ( 1 demo + 2 practice )**

**Unit 3: Windows Control [25%]**

Textbox , rich text box, listbox , combo box, checked list box, scrollbar , trackbar, timer , picture box, image box , label, link label, radio button , check box, group box,

**No of lectures : 07**  
**No of Practical : 06 ( 3 demo + 3 practice)**

**Unit 4: Advanced Windows Control [20%]**

Listview , treeview , common dialog controls ( open ,save, font , color , print , page setup... etc ) ,tab control , date time picker

**No of lectures :05**  
**No of Practical :05 ( 2 demo + 3 practice )**

**Unit 5: MDI with OOPS [15%]**

Introduction about menu & context menu  
Menu editor & context menu as tool  
Menus properties , event & methods  
Overview of OOPS ( object, class, inheritance , encapsulation, abstraction )  
Module & Class module and their uses

**No of lectures :05**  
**No of Practical :03 ( 1 demo + 2 practice )**

**Unit 6: Basic of classes / functions ( Libraries ) [15%]**

Overview of VB.NET library & it's utility  
Important of 'import' keyword & it's usage  
Various classes / functions ( char, string, string builder , numeric , date time , time span class.... Etc)

**No of lectures :04**  
**No of Practical : 04 ( 2 demo + 2 practice )**

**TOTAL NO OF THEORY :- 30 hrs.**

**TOTAL NO OF PRACTICAL :- 21 hrs.**

**Text book:**

1. Mastering in VB.NET by Evangelos Petroustos : bpb Publication
2. Programming by VB .Net by Shyam Chavada : Books India Publication

**Reference Book :-**

1. Projects in VB.NET Publication : O-Relly Publication
2. An Introduction to programming using VB.NET by Devid Schneider Publication : phi Publication

**Teaching and Examination Scheme**

UNIT	Examination Scheme %weightage	Teaching Scheme No of	
		Theory	Practical
Unit 1	10	4	0
Unit 2	15	5	3
Unit 3	25	7	6
Unit 4	20	5	5
Unit 5	15	5	3

<b>Unit 6</b>	<b>15</b>	<b>4</b>	<b>4</b>
<b>TOTAL</b>	<b>100%</b>	<b>30</b>	<b>21</b>

**Sample Practical Exercise:**

**Ex. – I : Objective : by this exercise students can learn ...**

Various input methods  
 How to run and Debug application  
 Use some important property  
 Maximum practice on Decision making and few on looping control statement  
 Various event like : `_load` , `_formclosing` , `_click` , `_lostfocus` , `_keypress` , `_selectindexchange`... etc

1. introduction of event using minimum 3 event with the name of event using msgbox ( click , load , formclosing , formclick ..... )
2. Enter any number in inputbox and check it is zero , positive or negative using if.. else if..... endif
3. Enter any one number from inputbox and display that number is even/odd , prime/not factorial using command button and result should be display in various labels
4. using command button click event practice to change the various property of form , label , textbox , picture box .....etc
5. Enter any two numbers in two different textbox and create buttons of + , - , X and / display this answer in a label
6. Enter any number from input box and check is it historic number or not ?
7. Enter year in a textbox and check year is leap / not in label
8. Pick up 1 textbox and validate it to enter only Text data allow to enter in it else give msgbox
9. Pick up 1 textbox and validate it to enter only numeric data allow to enter in it else give msgbox
10. Enter student's name pick up degree and year from combo box and then enter 7 subject marks in textboxes, then calculate total , per and print grade in various label using lost focus event
11. Enter employee name , pick up dept name from combo box , and then enter basic salary into textbox and using keypress event calculate total salary using [ HRA (35%) , DA (85%) , MA ( 10%) , TA (15%).. ,-> Total Salary , Deduction : PF (8.5%) , IT (15%) , Loanfund (10%)-> deduction , finally find out Net salary using key press event)
12. Enter any numeric value as a farenhit and convert into celcius display at label using command button click event
13. Write an application in vb.net in which enter one number in textbox and find out is it
  - Even/odd
  - Prime/not
  - Magic/not
  - Factorial
  - Square root of it when we put mouse on respective labels
14. Write an application in vb.net which accept only numeric value in both and using auto calculation display addition , subtraction , multiplication and division in respective labels
15. Write an application in vb.net which that display your five friends name with different images using auto execution of timer having 1 seconds [ use timer , interval – property , \_tick event]
16. Write an application in vb.net which display real calculator having 0-9 , . , clear , +,-,\*,/, and = button
17. Write an application in vb.net which display real calculator having 0-9 , . , clear , +,-,\*,/, and = button having facility of using ‘.’ Precision only once use

18. Write an application in vb.net which display real calculator having 0-9 , . , clear , +,-, \*,/, and = button having facility of using '.' Precision only once use and some other function of scientific calculator also

**Ex. – II : Objective : by this exercise students can learn ...**

Use some new controls like listbox , combobox , check box, rdio button , ...etc  
Maximum practice need for all this control with proper layout and design  
For more practice try subroutine , function of OOPS with this exercise.  
Various event like : \_load , \_Mousehover , \_click , \_lostfocus , \_keypress ,  
\_selectindexchange... etc

19. Write an application in vb.net which display 1 textbox and having three radio button named 'left justify' , ' right justify ' and 'center ' when we click on it works
20. Write an application in vb.net which display 1 textbox , 2 check box named 'red' . 'blue' for background color and 2 check box named 'yellow' and 'green' for foreground color when we click it , it should works
21. Write an application in vb.net which display any good message and bad message in a textbox when we put mouse on the buttons of ' good message' and 'bad message' this message must display and when we scroll mouse on if this will be off using proper event.
22. Write an application in vb.net which put three check box named 'pizza' ,' burger' and ' coke ' on the activation of each your food choice should be on/off at a label
23. Write an application in vb.net which put 1 button named 'Input Data' When we click on it it ask as minimum and maximum value then 1 combobox should display in which there are even , odd , prime are the list item when we click on any of them between min to max that list item's numbers should be display at label
24. Write an application in vb.net which transfer each data value from listbox1 to listbox2 by clicking of '>' , '>>' , '<' , and '<<' same with listbox2 to listbox1
25. Write an application in vb.net which input some user's choice no ( by inputbox ) to listbox 1 and then when we select that number from listbox appropriate number's square root must be display at ans label.
26. Write an application in vb.net which has three scroll bar named 'red' , 'blue' and 'green' having maximum value of 255 on scrolling of each 1 label color must be changed as per their value
27. Write an application in vb.net which 1 scroll bar has value of 1 to 100 this is cms value as per scroll event it measure inches , feets and miters value should display at proper labels
28. Write an application in vb.net which 1 scroll bar has value of 1 to 10 as per scrolling of it find out the square root and factorial number at proper labels
29. Write an application in vb.net which has track bar having value of 1 to 100 and print multiplication table according to scrolling of each value.
30. Write an application in vb.net which has track bar having value of 1 to 100 and as per scrolling of each that track bar value is prime or not it should be print at ans label.
31. Write an application in vb.net which has 1 combo box for menu type ( Guj. Punjabi , Chinese) then after at the selection of menu type menu items are added to the listbox at dynamic level finally selection of menu item price should be display at label and quantity textbox appear at key press event of textbox get the bill of order
32. Write an application in vb.net which has check boxes and parallel textboxes are there on selection of checkbox Item name , price and quantity textbox display ( visible ) enter qty and for multiple item generate the total bill and get net bill at label using following discount scheme

<u><b>Total bill</b></u>	<u><b>Discount</b></u>
1000 – 2000 Rs.	10%
2000 – 5000 Rs.	20%
>=5000 Rs.	25%



**Ex. – III : Objective : by this exercise student learn about advance control**

Use some advance control like dialog boxes , timer , tab , Menu , module , date time picker Using OOPS concept of module take interaction between web pages Small interconnected menu based application with out front end – back end process Some live hardware interaction using drive , directory and file class
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33. Write an application in vb.net which has a rich text box , some button of open , new , save and check to open , save file concept with dialog box application
34. Write an application in vb.net which has proper MDI ( Menu Document Interface ) of File menu , Format menu , having option of new , open , save , exit , format menu like fore color , font changes , background color ,... etc to provide such facility create a Semi Notepad type of application
35. Write an application in vb.net which has proper MDI ( Menu Document Interface ) of File menu , Format menu , Edit menu ,... etc to provide such facility create a full Notepad type of application
36. Create a Multiple Document Interface of Student information form after this press Next button , then 7 subject marks , press Next finally third form will open having student name , all subject marks , total , per , with grade , put some validation like student name can has only alphabet only, 7 subject marks has only numeric value only... etc and generate mark sheet
37. Check some mathematical function , String function , date time function using tab order where you can use 3 tab and apply any min 5 function of each class as separately
38. Write an application in vb.net which has one date time picker as per select index changed process apply some methods of date and time class like add days , today , now , addhours , addminute , isleapyer , daysofmonth. And check in form
39. Write an application in vb.net which looks like 'Windows explorer' having full facility of drive , directory and file class methods and class utilization
40. Rotating different picture ( images ) in a picture box using timer tool

**KADI SARVA VISHWAVIDYALAYA**  
**BCA – SEMESTER III**  
**BCA 304- Processor Architecture and Utility**

**RATIONALE:** Processor Architecture is to enable students to have an understanding of designing a computer to achieve high performance considering the basic concepts processor speed, memory speed, memory capacity and interconnection data rates . The processor components such as Control unit, registers, ALU and instruction and execution unit and the study of control unit which provides control signals for operation and coordination of all processor components

**Learning Outcomes: We have already covered in semester-1 till Computer Architecture and instruction set . we will consider the next topics which**

The student will be able to understand:

1. Basic components of processor
2. implementation technique of microprogramming
3. parallel organization that takes place in multiple processor and vector processor

**Teaching and Evaluation Scheme:** The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of internal examinations which consist of class test, quizzes, class participation, home assignments, presentation, Regular Attendance (i.e. Minimum 75% ), Internal which consist of 40 (10 Term Work + 20 Sessional Exams+ 10 Attendance) marks and University examination.

Sr. No./ Subject Code	Subject Title	Teaching Scheme		Exam Scheme					
		Cr	Theory+ Tut	Theory		Practical		T.W +Sessional Marks	Total Marks
				Hrs	Max Marks	Hrs	Max Marks		
BCA304	Processor Architecture & Utility	4	3+1	4	60	-	-	40	100

**Course Content:**

**Unit [1] : Principles of Computer Design**

**[20%]**

Revision of topics of Computer Organization (block diagram, user and computer)  
 Software and hardware interaction layers in computer architecture, Central Processing Unit , processor design, goals, data path organization.

**No. of Lectures:- [6]**

**Unit [2] : Memory Management Concepts**

**[20%]**

Memory hierarchy, Main Memory, Auxiliary Memory, Cache Memory, Virtual Memory, Associative Memory. Memory Management Techniques

**No. of Lectures:- [6]**

**Unit [3] : Introduction to Processor and electrical components**

**[20%]**

Basic electronic components, capacitor, resistor, diode, transistor, comparison of microprocessor and microcontroller, processor categories, Architecture of 8051, addressing modes of 8051,

**No. of Lectures:- [ 8]**

**Unit [4 ] : Interfacing 8051**

**[20%]**

introduction to registers and programming instructions.8051, programming using KEIL C in 8051 programming in C language, Data type used, Utilization of PORT 0-3, virtual environment in keil C , writing a program for the use of LCD , LED, 7 SEGMENT display

**No. of Lectures:- [8]**

**Unit [5] : passing the message to 8051**

**[20%]**

Micro-controller programming, burning the code into the processor using Flash Magic, time delay calculation for 8051, use of SERIAL COMMUNICATION (MAX 232),

**No. of Lectures:- [ 8]**

**Total No of Theory Lectures: - 36 Hrs.**

**Text book:**

- (1) Computer Architecture and organization by B Govindrajalu (TMH)
- (2) Embedded Systems Concepts and Application by Dr.N.NJani

**Reference book**

Advanced microprocessor and interfacing by Badri Ram

**Instructional Strategies:**

- 1. Building Background
- 2. Direct Instruction
- 3. Review and check of Prior knowledge
- 4. Integrate topics and concepts
- 5. Guided Practice
- 6. Independent Practice
- 7. Demonstration using technology tools
- 8. Provide examples to transfer learning

**Teaching and Examination Scheme**

UNIT	Examination Scheme %weightage	Teaching Scheme No. of Lecture
Unit-1	20	6
Unit-2	20	6
Unit-3	20	8
Unit-4	20	8
Unit-5	20	8
<b>Total</b>	<b>100</b>	<b>36</b>

**KADI SARVA VISHWAVIDYALAYA**  
**BCA – SEMESTER III**  
**BCA 305 Software Project Management**

**Rationale:** The Course provide the detail concept of managing and different techniques for developing a Software Project and even covers how to solve typical software project planning, controlling and reporting features of Software Project Management Tools like Microsoft Project, henceforth one can work within tight schedules, manage resources across the organization and deliver results on time and within budget during the development of a Software Project.

**Learning outcomes:** The Student Will be able to :

- Gain brief knowledge of Software Project Management
- Plan, build and manage project schedules and budgets using Microsoft Project Professional.
- Select an excellent appropriate project approach.
- Build a project plan, enter tasks and develop calendars.
- Evaluate the Project using different methods.
- Learn Software Project Management strategies.

**Teaching and Evaluation Scheme:** The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of internal examinations which consist of Term Work such as class test, quizzes, class participation, home assignments, presentation, Regular Attendance (i.e. Minimum 85% ), Internal marks which consist of 40 (20 Term Work + 20 Sessional Exams) marks and External marks which consist of 60 for University examination.

Sr. No./ Subject Code	Subject Title	Teaching Scheme				Exam Scheme					
		Cr.	Th.	Pr.	Tut.	Theory		Practical #		T.W +Sessional Marks	Total Marks
						Hrs	Max Marks	Hrs	Max Marks		
BCA305	<b>Software Project Management</b>	4	3	-	1	3	60	-	-	40	100

**Course content:**

**Unit 1 : Introduction to Software Project Management [20%]**

Project and characteristic of project, Project Management, Software Project Management, Activities of software project management, Plans, methods and methodologies, stakeholders, objective and sub objective, Project success and failure, Management and control  
 Overview of Project Planning  
 Introduction to different SPM tools like MS Project, Visual Source Safe. Working with the environment and different features like various types of calendars etc. in MS Project.

**No. of Lectures : 05**  
**No. of Practical : 04**

**Unit 2 : Selection of Project approach and effort estimation** [20%]  
Project: Build or buy. Choosing Methodologies and technologies, Project Development Models : Waterfall Model, Spiral Model and Software prototyping, Dynamic System Development Model.  
Effort estimation : Introduction, stages of estimation, over and under estimation, basis for software estimating, software effort estimation techniques

**No. of Lectures: 06**  
**No. of Practical: 04**

**Unit 3: Activity Planning and Risk Management** [15%]  
Overview and objective of activity planning, When to plan, Project schedules, Project and activities, WBS, Adding the time dimension using forward pass and backward pass, network diagram and identifying the critical path using PERT (Overview of PERT)  
Risk and categories, Risk identification, risk assessment, risk planning, risk management  
**No of Lectures: 06**  
**No of Practical : 04**

**Unit 4 : Resource Allocation** [15%]  
Introduction to Resource allocation, The nature of resources, Identifying resource requirements, Scheduling of Resources, cost schedules and scheduling sequence  
**No. of Lectures: 04**  
**No. of Practical: 04**

**Unit 5 : Monitoring , Control and contracts** [15%]  
Creating the framework, collecting the data, visualizing progress, cost monitoring, prioritizing monitoring  
Introduction to contracts & its types, Stages in contract placement, Typical Terms of Contracts, Contract Management, acceptance  
**No. of Lectures: 05**  
**No. of Practical: 04**

**Unit 6 : Software Contracts and Documentation** [15%]  
Organizational Behavior, Recruiting People, Working in Group and Team, Leadership and Decision Making, Stress Management.  
Important of software quality, Process capability models and quality plans, testing (V Process Model)  
**No. of Lectures: - 04**  
**No. of Practical: - 04**

**Total No of Lectures :- 30 Hrs.**  
**Total No of Practical :- 24 Hrs.**

**Text Book:**

1. Software Project Management by Bob Hughes & Mike Cotterell by Tata Mc. Hill. (5<sup>th</sup> Edition)

**Reference:**

1. Software Project Management: a real world guide to success : By Joel Henry
2. Software Project Management : By Pankaj Jalote
3. Basis of Software Project Management by NIIT

**Instructional Strategies:**

1. Building Background
2. Direct Instruction
3. Review and check of Prior knowledge
4. Integrate topics and concepts
5. Guided Practice
6. Independent Practice
7. Demonstration using technology tools
8. Provide examples to transfer learning
9. Case Studies.

**Teaching and Examination Scheme :**

UNIT	Examination Scheme %weightage	Teaching Scheme No of	
		Theory	Practical *
Unit 1	20	5	4
Unit 2	20	6	4
Unit 3	15	6	4
Unit 4	15	4	4
Unit 5	15	5	4
Unit 6	15	4	4
<b>TOTAL</b>	<b>100%</b>	<b>30</b>	<b>24</b>

\* This will be performed under project work 309.

**Sample Question:**

What is Management?

Explain Project Control Life Cycle.

List the Product created by step wise planning process.

Explain the Dynamic System Development Method.

Explain MoSCoW classification.

Where are estimation done?

Describe the problems with over and under estimation.

If you were ask as an expert to provide and estimate of the effort needed to make certain changes to an existing module of software, what information would you like to have to hand to assist you in marketing the estimate?

Explain Risk assessment and risk management.

What is Contract? Explain different types of contract.

**KADI SARVA VISHWAVIDYALAYA**  
**BCA – SEMESTER III**  
**BCA 309 Project Work**  
**On**

Processor Architecture & Utility (304) **OR** Software Project Management (305)

**Rationale:** The Project Work provide the detail working knowledge of various Software Project Management Tools like Microsoft Project, MS Project and Visual Source Safe, and Implementation of the tools to plan, evaluate, control, Monitor and finally prepare the Documentation of Software Project. This Project Work is the Practical Exposure for the BCA 305 Software Project Management. **Or**

**The main objective of project work is that, students can select their choice to perform the project work among to vital area of Computer Science such as Software Project Management or Processor Architecture and Utility.**

**Learning outcomes:** the students will be able to have hands-on exercises to carry out the Project Work using Microsoft Project or using software simulators like proteus, flash magic, keil C using which will provide practical experience as:

- Creating project plans and templates of software and hardware components
- Defining activities, costs, risks and overall project scope and developing connections
- Assigning resources and resolving over-allocations or programming through 8051
- Optimizing and fine-tuning project plans to finish on time. Or burning the code into the processor
- Tracking and recording progress and responding to updates.
- Gauging project performance and identifying problems.
- Placing tasks and projects back on schedule.
- Design real like applications like watch dog, LED. displays, LCD displays etc

**Teaching and Evaluation Scheme:** The objective of evaluation is not only to measure the performance of students, but also to motivate them for better performance. Students are evaluated on the basis of internal examinations consisting of 50 marks (continuous evaluation based on Project Work allocated 10 for the First Phase + 20 for the Second Phase + 20 for the Final Phase during regular lab hours (with Regular Attendance (i.e. Minimum 85% )) and External marks which consist of 50 for viva-voice presentation on Project Work in University Examination.

Sr. No./ Subject Code	Subject Title	Teaching Scheme				Exam Scheme					
		Cr.	Th.	Pr.	Tut.	Theory		Practical #		T.W +Sessional Marks	Total Marks
						Hrs	Max Marks	Hrs	Max Marks		
BCA309	Project Work (SPM & PAU)	4	-	4 (2:2)	-	-	-	3	50	50	100



## **Project work documentation content for SPM**

**Note: The student will be given the different project definition for project work on software project management, on basis of this they have to work for that definition using MS Visio and MS Project.**

### **Phase I Building a Project Plan from Scratch [40%]**

1. Introduction of group with project Title
2. Preliminary Investigation
  - i. Need of project
  - ii. Project scope and limitation
  - iii. Profile of the organization
  - iv. Existing System
  - v. Advantages and Disadvantages of existing System
  - vi. Organization Chart
  - vii. Proposed System
  - viii. Feasibility Study
3. Building Project Plan from scratch
  - i. Introduction (Definition)
  - ii. Planning Activities (Task Description)
  - iii. Designing Calendars
4. System Requirement Specification
5. Data Flow Diagram of System
  - i. Context Level
  - ii. 1<sup>st</sup> level
  - iii. 2<sup>nd</sup> level
6. Entity Relationship Diagram
7. Data Dictionary

### **Phase II Cost Estimation Scheduling and Assigning Recourses [30%]**

8. Scheduling and Assigning Resources
  - i. Scheduling project task
  - ii. Assigning human and required resources to task
  - iii. Managing Resources

### **Phase III Monitoring and Controlling the Software Projects [30%]**

9. Monitoring and Controlling the software projects
  - i. Optimizing the schedule
  - ii. Updating a project and recording progress
  - iii. Finalize the project report

## **Project work documentation content For PAU Project**

**Phase I: Building a Project Plan from Scratch** [20%]

Select the Project Definition  
Getting the knowledge of pickup tools from Proteus ,  
PCB design is done by selecting the hardware components.

**Phase II Working on virtual environment** [30%]

Learn the Software requirements of Flash Magic and KeilC  
selection of the hardware components  
Establishing the connections between the components  
Developing the logic in C Lang  
Burning the code into the processor

**Phase III: Developing the kit** [30%]

Optimizing the components  
assemble the hardware components, on PCB and soldering the components  
Develop the final circuit and conducting the testing phase of the hardware kit.

**Phase IV : Documentation of the Project** [20%]

Introduction of group with project Title  
Project Profile  
Software and Hard Specification  
Process Approach  
System Block Diagram  
Hardware Selection  
Development of PCB  
Soldering Technique  
Pictures of the Display Board

**Instructional Strategies:**

1. Building Background.
2. Demonstration using technology tools.
3. It is up to the interest of the faculty and student that he / she does the project work in any of the area based on current industry requirement, which may be as follows:
  - Banking System
  - Education System
  - Trading System
  - Production System
  - Embedded Systems
4. Project should be submitted in 1 hard copy to the Institute for the evaluation.
5. The team size should not exceed maximum 3 students, which will report to Subject Faculty.
6. Team is decided by the subject faculty member of the institute.
7. Minimum 2hrs are allotted to a student per week based on the regular time table.
8. Final Project Evaluation will be done on the basis of Presentation and Viva-voice during the Internal and External Examination.

**Sample Lab Manual Exercises for  
SPM (309) Sem III**

**Exercise I: Create a project file to perform following tasks:**

Change the standard calendar to keep Saturdays as working days.

Regular timings from 9:30 to 1:30 and 2:00 to 5:00, hours per day 7, days per month 25.

Jan 14, Jan 26 and August 15 as holidays.

Specify the start date as 1<sup>st</sup> Jul 2011 for the project.

Assign priority equal to 745 to the project.

When you open the project instead of "Gantt Chart", "Calendar" should come as default.

Change the currency sign from \$ to Rs.

Change the path for saving the project to D:\SPM

**Exercise II: A Project has the following activities and other characteristics.**

Activity	Preceding Activity	Optimistic	Most Likely	Pessimistic
A	-	4	7	16
B	-	1	5	15
C	A	6	12	30
D	A	2	5	8
E	C	5	11	17
F	D	3	6	15
G	B	3	9	27
H	E,F	1	4	7
I	G	4	19	28

Draw the pert Network Diagram and identify the Critical Path.

**Exercise III: The owner of a chain of fast food restaurants is considering a new computer system for accounting and inventory control. A computer company sent the following information about the computer system installation.**

Activity	Preceding Activity	Optimistic	Most Likely	Pessimistic
A	-	4	6	8
B	A	5	7	15
C	A	4	8	12
D	B	15	20	25
E	B	10	18	26
F	C	8	9	16
G	E	4	8	12
H	D,F	1	2	3
I	G,H	6	7	8

Construct PERT network diagram for this problem. Determine the critical path.

**Exercise IV: Following table gives the list of various activities required and their immediate predecessors involved in installation of CAT scanner in a hospital.**

Task	Description	Resources	Predecessor	Expected Time days		
				Optimistic	Likely	Pessimistic
A	Finalization of the layout plan	Architect(1), Admin(1)	-	3	5	7
B	Demolition of the structure	Labourers(5), Hammers(5)	A	4	6	14
C	Walls erection	Bricks(5K), Masons(2),	B	3	6	10

		Labourers(3)				
D	Flooring	Masons(2), tiles(1 k)	B	14	20	23
E	Electrical wiring	Electricians(4), Wires(500 mt)	C	9	15	21
F	A/c ducting	Electricians(2),	C	6	9	12
G	Fire Alarm Installation	Electricians(2), Alarms(10)	C	5	8	11
H	False ceiling and light fittings	Masons(2),	E,F,G	1	2	3
I	Wall plastering and painting	Masons(2), paint(10 lts)	H			
J	Equipment installation	Electricians(1)	D,I	1	2	4
K	Calibration and testing	Electricians(1)	J	1	3	4
L	Final Finishing		K	3	5	6

**Exercises V : Create a MS Project file. Cost related details are as follows:**

Resources	Architect	Admin	Labourers	Hammers	Bricks/Tiles	Masons
Unit	Day	Day	Day	Day	Piece	Day
Availability	1	1	4	2	4000	2
Cost in Rs.	500	250	100	20	1	200
Accrual	start	Prorated	end	End		Prorated

Electrician	Wires	Paint	Alarms
Day	Meter	Litres	Piece
1	1	10	10
150	10	150	100
Start			

Make task K as subtask for task J

Keep 31 dec as a holiday and working times from 9:00 to 5:30 with recess from 1:00 to 1:30.

Keep jan 26, aug 15 and oct 2 as holidays.

Change the PERT Weights to 1.3 and 2 for optimistic, expected and pessimistic times.

Enter lag of 3 days between tasks C and D.

Change priorities for task D and H to 200 and 700.

Split task G into 2 parts.

Change priorities for task D and h to 200 and 700.

Split task G into 2 parts.

Enter % completion of 30,40 and 100 on tasks A,B,C

Write a note for any one task of your choice.

Enter a recurring task showing meeting of the team on every Monday from 5:00 to 5:30 pm.

Enter last task as a milestone task with description 'job successfully completed'

Put resource name on top of the bar and % completion on right of bazr in gantt chart.

Enter Actual start time and actual finish time of task with 100% completion.

